

SEQUENCE LISTING

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 Japan Science and Technology Agency
 Ginkgo Biomedical Research Institute Co., Ltd.

<120> Cdc7-ASK Kinase Complex, Substrates of the Kinase Complex,
 Specific Antibodies to the Substrates, and Screening Methods
 Using the Same to Screen for Compounds Comprising Cdc7-ASK
 Kinase Inhibitory Ability

<130> 082368-001100US

<140> US Not yet assigned
 <141> Not yet assigned

<150> JP 2002-067702
 <151> 2002-03-12

<150> WO PCT/JP03/02918
 <151> 2003-03-12

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<170> PatentIn Ver. 2.1

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Ala	Glu	Arg	Thr	Met	Arg	Gln	Arg	Asp	Arg	Glu	Ala	Gly	Arg	Gly	Leu	
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Gly	Arg	Met	Arg	Arg	Gly	Leu	Leu	Tyr	Asp	Ser	Ser	Glu	Glu	Asp	Glu	
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Glu	Arg	Pro	Ala	Arg	Lys	Arg	Arg	His	Val	Glu	Arg	Ala	Thr	Glu	Asp	
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ggc	gag	gag	gat	gaa	gag	atg	atc	gag	agt	att	gag	aat	ctg	gag	gac	528
Gly	Glu	Glu	Asp	Glu	Glu	Met	Ile	Glu	Ser	Ile	Glu	Asn	Leu	Glu	Asp	
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ctc aag ggc cac tcg gtg cgc gag cgg gtg agc atg gca ggg ccc agg	576
Leu Lys Gly His Ser Val Arg Glu Arg Val Ser Met Ala Gly Pro Arg	
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Leu Glu Ile His His Arg Phe Lys Asn Phe Leu Arg Thr His Val Asp	
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Ser His Gly His Asn Val Phe Lys Glu Arg Ile Ser Asp Met Cys Lys	
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gag aac cgt gag agt ttg gtg gta aat tat gaa gac ctg gca gcc cgg	720
Glu Asn Arg Glu Ser Leu Val Val Asn Tyr Glu Asp Leu Ala Ala Arg	
225 230 235 240	
gag cac gtg ttg gca tac ttc ctg ccg gaa gca ccg gct gag ttg ctg	768
Glu His Val Leu Ala Tyr Phe Leu Pro Glu Ala Pro Ala Glu Leu Leu	
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Gln Ile Phe Asp Glu Ala Ala Leu Glu Val Val Leu Ala Met Tyr Pro	
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Lys Tyr Asp Arg Ile Thr Asn His Ile His Val Arg Ile Ser His Leu	
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Pro Leu Val Glu Glu Leu Arg Ser Leu Arg Gln Leu His Leu Asn Gln	
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Gln Leu Ser Met Val Lys Tyr Asn Cys Ser Lys Cys Asn Phe Val Leu	
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Gly Pro Phe Cys Gln Ser Gln Asn Gln Glu Val Lys Pro Gly Ser Cys	
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Pro Glu Cys Gln Ser Ala Gly Pro Phe Glu Ile Asn Met Glu Glu Thr	
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Asp Leu Val Asp Ser Cys Lys Pro Gly Asp Glu Ile Glu Leu Thr Gly	
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Ile Tyr His Asn Asn Tyr Asp Gly Ser Leu Asn Thr Ala Asn Gly Phe	
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Pro Val Phe Ala Thr Ile Ile Leu Ala Asn His Val Ala Lys Lys Asp	
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Asn Lys Val Ala Val Gly Glu Leu Thr Asp Glu Asp Val Lys Met Ile	
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Thr Gly Leu Ser Lys Asp Gln Gln Ile Gly Glu Lys Ile Phe Ala Ser	
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Ile Ala Pro Ser Ile Tyr Gly His Glu Asp Ile Lys Arg Gly Leu Ala	
485 490 495	
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Leu Ala Leu Phe Gly Gly Glu Pro Lys Asn Pro Gly Gly Lys His Lys	
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Val Arg Gly Asp Ile Asn Val Leu Leu Cys Gly Asp Pro Gly Thr Ala	
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Lys Ser Gln Phe Leu Lys Tyr Ile Glu Lys Val Ser Ser Arg Ala Ile	
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Phe Thr Thr Gly Gln Gly Ala Ser Ala Val Gly Leu Thr Ala Tyr Val	
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Gln Arg His Pro Val Ser Arg Glu Trp Thr Leu Glu Ala Gly Ala Leu	
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Val Leu Ala Asp Arg Gly Val Cys Leu Ile Asp Glu Phe Asp Lys Met	
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Ile Ser Ile Ser Lys Ala Gly Ile Val Thr Ser Leu Gln Ala Arg Cys	
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Thr Val Ile Ala Ala Ala Asn Pro Ile Gly Gly Arg Tyr Asp Pro Ser	
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Leu Thr Phe Ser Glu Asn Val Asp Leu Thr Glu Pro Ile Ile Ser Arg	
645 650 655	

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Phe Asp Val Leu Cys Val Val Arg Asp Thr Val Asp Pro Val Gln Asp	
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Glu Met Leu Ala Arg Phe Val Val Gly Ser His Val Arg His His Pro	
675 680 685	
agt aac aag aag gat gaa ggg ttg act aat ggt ggc acc ttg gag cca	2112
Ser Asn Lys Lys Asp Glu Gly Leu Thr Asn Gly Gly Thr Leu Glu Pro	
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Ala Met Pro Asn Thr Tyr Gly Val Glu Pro Leu Pro Gln Glu Val Leu	
705 710 715 720	
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Lys Lys Tyr Ile Ile Tyr Ala Lys Glu Arg Val Arg Pro Lys Leu Asn	
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cag atg gac cag gat aaa gtg gcc agg atg tac agt gac ctg agg aag	2256
Gln Met Asp Gln Asp Lys Val Ala Arg Met Tyr Ser Asp Leu Arg Lys	
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Glu Ser Met Ala Thr Gly Ser Ile Pro Ile Thr Val Arg His Ile Glu	
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Ser Met Ile Arg Met Ala Glu Ala His Ala Arg Met His Leu Arg Asp	
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Tyr Val Met Glu Asp Asp Val Asn Met Ala Ile Arg Val Met Met Glu	
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agc ttc att gac acc cag aag ttc agc gtc atg cgg agt atg cgc aag	2448
Ser Phe Ile Asp Thr Gln Lys Phe Ser Val Met Arg Ser Met Arg Lys	
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act ttt gcc cgg tat ctc tcc ttc cgg cga gat aac aat gat ctg ctg	2496
Thr Phe Ala Arg Tyr Leu Ser Phe Arg Arg Asp Asn Asn Asp Leu Leu	
820 825 830	
ctc ttc ata ctg aag cag ttg gtg gct gag cag gtg aca tat caa cgc	2544
Leu Phe Ile Leu Lys Gln Leu Val Ala Glu Gln Val Thr Tyr Gln Arg	
835 840 845	
aac cgc ttt ggg gcc cag cag gac acc att gaa ata cct gag aag gat	2592
Asn Arg Phe Gly Ala Gln Gln Asp Thr Ile Glu Ile Pro Glu Lys Asp	
850 855 860	
ctg atg gac aag gcc agg cag atc aat att cac aac ctc tct gcc ttc	2640
Leu Met Asp Lys Ala Arg Gln Ile Asn Ile His Asn Leu Ser Ala Phe	
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<212> PRT
<213> Mus musculus
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Phe	Glu	Asp	Glu	Ser	Glu	Gly	Leu	Leu	Gly	Thr	Glu	Gly	Pro	Met	Glu
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Tyr	Arg	Pro	Ile	Pro	Glu	Leu	Asp	Val	Tyr	Glu	Ala	Glu	Gly	Leu	Ala
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Gly	Glu	Glu	Asp	Glu	Glu	Met	Ile	Glu	Ser	Ile	Glu	Asn	Leu	Glu	Asp
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Leu	Lys	Gly	His	Ser	Val	Arg	Glu	Arg	Val	Ser	Met	Ala	Gly	Pro	Arg
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Leu	Glu	Ile	His	His	Arg	Phe	Lys	Asn	Phe	Leu	Arg	Thr	His	Val	Asp
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Ser	His	Gly	His	Asn	Val	Phe	Lys	Glu	Arg	Ile	Ser	Asp	Met	Cys	Lys
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Glu	Asn	Arg	Glu	Ser	Leu	Val	Val	Asn	Tyr	Glu	Asp	Leu	Ala	Ala	Arg
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Glu	His	Val	Leu	Ala	Tyr	Phe	Leu	Pro	Glu	Ala	Pro	Ala	Glu	Leu	Leu
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Gln	Ile	Phe	Asp	Glu	Ala	Ala	Leu	Glu	Val	Val	Leu	Ala	Met	Tyr	Pro
			260					265					270		
Lys	Tyr	Asp	Arg	Ile	Thr	Asn	His	Ile	His	Val	Arg	Ile	Ser	His	Leu
		275					280					285			
Pro	Leu	Val	Glu	Glu	Leu	Arg	Ser	Leu	Arg	Gln	Leu	His	Leu	Asn	Gln
	290					295					300				
Leu	Ile	Arg	Thr	Ser	Gly	Val	Val	Thr	Ser	Cys	Thr	Gly	Val	Leu	Pro
305					310					315					320
Gln	Leu	Ser	Met	Val	Lys	Tyr	Asn	Cys	Ser	Lys	Cys	Asn	Phe	Val	Leu
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Gly	Pro	Phe	Cys	Gln	Ser	Gln	Asn	Gln	Glu	Val	Lys	Pro	Gly	Ser	Cys
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Ile	Tyr	Gln	Asn	Tyr	Gln	Arg	Ile	Arg	Ile	Gln	Glu	Ser	Pro	Gly	Lys
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Val	Ala	Ala	Gly	Arg	Leu	Pro	Arg	Ser	Lys	Asp	Ala	Ile	Leu	Leu	Ala
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Asp	Leu	Val	Asp	Ser	Cys	Lys	Pro	Gly	Asp	Glu	Ile	Glu	Leu	Thr	Gly
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Ile	Tyr	His	Asn	Asn	Tyr	Asp	Gly	Ser	Leu	Asn	Thr	Ala	Asn	Gly	Phe
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Pro	Val	Phe	Ala	Thr	Ile	Ile	Leu	Ala	Asn	His	Val	Ala	Lys	Lys	Asp
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		450				455					460				
Thr	Gly	Leu	Ser	Lys	Asp	Gln	Gln	Ile	Gly	Glu	Lys	Ile	Phe	Ala	Ser
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Ile	Ala	Pro	Ser	Ile	Tyr	Gly	His	Glu	Asp	Ile	Lys	Arg	Gly	Leu	Ala
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Leu	Ala	Leu	Phe	Gly	Gly	Glu	Pro	Lys	Asn	Pro	Gly	Gly	Lys	His	Lys
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Val	Arg	Gly	Asp	Ile	Asn	Val	Leu	Leu	Cys	Gly	Asp	Pro	Gly	Thr	Ala
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Lys	Ser	Gln	Phe	Leu	Lys	Tyr	Ile	Glu	Lys	Val	Ser	Ser	Arg	Ala	Ile
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Phe	Thr	Thr	Gly	Gln	Gly	Ala	Ser	Ala	Val	Gly	Leu	Thr	Ala	Tyr	Val
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Gln	Arg	His	Pro	Val	Ser	Arg	Glu	Trp	Thr	Leu	Glu	Ala	Gly	Ala	Leu
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Val	Leu	Ala	Asp	Arg	Gly	Val	Cys	Leu	Ile	Asp	Glu	Phe	Asp	Lys	Met
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Asn	Asp	Gln	Asp	Arg	Thr	Ser	Ile	His	Glu	Ala	Met	Glu	Gln	Gln	Ser
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Ile	Ser	Ile	Ser	Lys	Ala	Gly	Ile	Val	Thr	Ser	Leu	Gln	Ala	Arg	Cys
	610					615					620				
Thr	Val	Ile	Ala	Ala	Ala	Asn	Pro	Ile	Gly	Gly	Arg	Tyr	Asp	Pro	Ser
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Leu	Thr	Phe	Ser	Glu	Asn	Val	Asp	Leu	Thr	Glu	Pro	Ile	Ile	Ser	Arg
				645					650					655	
Phe	Asp	Val	Leu	Cys	Val	Val	Arg	Asp	Thr	Val	Asp	Pro	Val	Gln	Asp
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Glu	Met	Leu	Ala	Arg	Phe	Val	Val	Gly	Ser	His	Val	Arg	His	His	Pro
		675					680					685			
Ser	Asn	Lys	Lys	Asp	Glu	Gly	Leu	Thr	Asn	Gly	Gly	Thr	Leu	Glu	Pro
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Lys	Lys	Tyr	Ile	Ile	Tyr	Ala	Lys	Glu	Arg	Val	Arg	Pro	Lys	Leu	Asn
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Gln	Met	Asp	Gln	Asp	Lys	Val	Ala	Arg	Met	Tyr	Ser	Asp	Leu	Arg	Lys
			740					745					750		
Glu	Ser	Met	Ala	Thr	Gly	Ser	Ile	Pro	Ile	Thr	Val	Arg	His	Ile	Glu
		755					760					765			
Ser	Met	Ile	Arg	Met	Ala	Glu	Ala	His	Ala	Arg	Met	His	Leu	Arg	Asp
	770					775					780				
Tyr	Val	Met	Glu	Asp	Asp	Val	Asn	Met	Ala	Ile	Arg	Val	Met	Met	Glu
785					790					795					800
Ser	Phe	Ile	Asp	Thr	Gln	Lys	Phe	Ser	Val	Met	Arg	Ser	Met	Arg	Lys
				805					810					815	
Thr	Phe	Ala	Arg	Tyr	Leu	Ser	Phe	Arg	Arg	Asp	Asn	Asn	Asp	Leu	Leu
			820					825					830		
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		835					840					845			

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Asn Arg Phe Gly Ala Gln Gln Asp Thr Ile Glu Ile Pro Glu Lys Asp
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Leu Met Asp Lys Ala Arg Gln Ile Asn Ile His Asn Leu Ser Ala Phe
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<400> 6

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aattggcttg tg atg gag gcg tct ttg ggg att cag atg gat gag cca atg 171
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gct ttt tct ccc cag cgt gac cgg ttt cag gct gaa ggc tct tta aaa 219
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aaa aac gag cag aat ttt aaa ctt gca ggt gtt aaa aaa gat att gag 267
Lys Asn Glu Gln Asn Phe Lys Leu Ala Gly Val Lys Lys Asp Ile Glu
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Lys Leu Tyr Glu Ala Val Pro Gln Leu Ser Asn Val Phe Lys Ile Glu
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gac aaa att gga gaa ggc act ttc agc tct gtt tat ttg gcc aca gca 363
Asp Lys Ile Gly Glu Gly Thr Phe Ser Ser Val Tyr Leu Ala Thr Ala
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cag tta caa gta gga cct gaa gag aaa att gct cta aaa cac ttg att 411
Gln Leu Gln Val Gly Pro Glu Glu Lys Ile Ala Leu Lys His Leu Ile
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cca aca agt cat cct ata aga att gca gct gaa ctt cag tgc cta aca 459
Pro Thr Ser His Pro Ile Arg Ile Ala Ala Glu Leu Gln Cys Leu Thr
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gtg gct ggg ggg caa gat aat gtc atg gga gtt aaa tac tgc ttt agg 507
Val Ala Gly Gly Gln Asp Asn Val Met Gly Val Lys Tyr Cys Phe Arg
110              115              120              125

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Lys Asn Asp His Val Val Ile Ala Met Pro Tyr Leu Glu His Glu Ser
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Phe Leu Asp Ile Leu Asn Ser Leu Ser Phe Gln Glu Val Arg Glu Tyr	
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Met Leu Asn Leu Phe Lys Ala Leu Lys Arg Ile His Gln Phe Gly Ile	
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gtt cac cgt gat gtt aag ccc agc aat ttt tta tat aat agg cgc ctg	699
Val His Arg Asp Val Lys Pro Ser Asn Phe Leu Tyr Asn Arg Arg Leu	
175 180 185	
aaa aag tat gcc ttg gta gac ttt ggt ttg gcc caa gga acc cat gat	747
Lys Lys Tyr Ala Leu Val Asp Phe Gly Leu Ala Gln Gly Thr His Asp	
190 195 200 205	
acg aaa ata gag ctt ctt aaa ttt gtc cag tct gaa gct cag cag gaa	795
Thr Lys Ile Glu Leu Leu Lys Phe Val Gln Ser Glu Ala Gln Gln Glu	
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Arg Cys Ser Gln Asn Lys Ser His Ile Ile Thr Gly Asn Lys Ile Pro	
225 230 235	
ctg agt ggc cca gta cct aag gag ctg gat cag cag tcc acc aca aaa	891
Leu Ser Gly Pro Val Pro Lys Glu Leu Asp Gln Gln Ser Thr Thr Lys	
240 245 250	
gct tct gtt aaa aga ccc tac aca aat gca caa att cag att aaa caa	939
Ala Ser Val Lys Arg Pro Tyr Thr Asn Ala Gln Ile Gln Ile Lys Gln	
255 260 265	
gga aaa gac gga aag gag gga tct gta ggc ctt tct gtc cag cgc tct	987
Gly Lys Asp Gly Lys Glu Gly Ser Val Gly Leu Ser Val Gln Arg Ser	
270 275 280 285	
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Val Phe Gly Glu Arg Asn Phe Asn Ile His Ser Ser Ile Ser His Glu	
290 295 300	
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Ser Pro Ala Val Lys Leu Met Lys Gln Ser Lys Thr Val Asp Val Leu	
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Ser Arg Lys Leu Ala Thr Lys Lys Lys Ala Ile Ser Thr Lys Val Met	
320 325 330	
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Asn Ser Ala Val Met Arg Lys Thr Ala Ser Ser Cys Pro Ala Ser Leu	
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acc tgt gac tgc tat gca aca gat aaa gtt tgt agt att tgc ctt tca	1227
Thr Cys Asp Cys Tyr Ala Thr Asp Lys Val Cys Ser Ile Cys Leu Ser	
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agg cgt cag cag gtt gcc cct agg gca ggt aca cca gga ttc aga gca	1275
Arg Arg Gln Gln Val Ala Pro Arg Ala Gly Thr Pro Gly Phe Arg Ala	
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Pro Glu Val Leu Thr Lys Cys Pro Asn Gln Thr Thr Ala Ile Asp Met	
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Trp Ser Ala Gly Val Ile Phe Leu Ser Leu Leu Ser Gly Arg Tyr Pro	
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Phe Tyr Lys Ala Ser Asp Asp Leu Thr Ala Leu Ala Gln Ile Met Thr	
415 420 425	
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Ile Arg Gly Ser Arg Glu Thr Ile Gln Ala Ala Lys Thr Phe Gly Lys	
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Ser Ile Leu Cys Ser Lys Glu Val Pro Ala Gln Asp Leu Arg Lys Leu	
450 455 460	
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Asp Ile Gln Gly His Ala Ser His Gln Pro Ala Ile Ser Glu Lys Thr	
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Asp His Lys Ala Ser Cys Leu Val Gln Thr Pro Pro Gly Gln Tyr Ser	
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Gly Asn Ser Phe Lys Lys Gly Asp Ser Asn Ser Cys Glu His Cys Phe	
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gat gag tat aat acc aat tta gaa ggc tgg aat gag gta cct gat gaa	1755
Asp Glu Tyr Asn Thr Asn Leu Glu Gly Trp Asn Glu Val Pro Asp Glu	
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gct tat gac ctg ctt gat aaa ctt cta gat cta aat cca gct tca aga	1803
Ala Tyr Asp Leu Leu Asp Lys Leu Leu Asp Leu Asn Pro Ala Ser Arg	
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ata aca gca gaa gaa gct ttg ttg cat cca ttt ttt aaa gat atg agc	1851
Ile Thr Ala Glu Glu Ala Leu Leu His Pro Phe Phe Lys Asp Met Ser	
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Leu	
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<212> PRT

<213> Homo sapiens

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Gln Asn Phe Lys Leu Ala Gly Val Lys Lys Asp Ile Glu Lys Leu Tyr
35          40          45
Glu Ala Val Pro Gln Leu Ser Asn Val Phe Lys Ile Glu Asp Lys Ile
50          55          60
Gly Glu Gly Thr Phe Ser Ser Val Tyr Leu Ala Thr Ala Gln Leu Gln
65          70          75          80
Val Gly Pro Glu Glu Lys Ile Ala Leu Lys His Leu Ile Pro Thr Ser
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His Pro Ile Arg Ile Ala Ala Glu Leu Gln Cys Leu Thr Val Ala Gly
100          105          110
Gly Gln Asp Asn Val Met Gly Val Lys Tyr Cys Phe Arg Lys Asn Asp
115          120          125
His Val Val Ile Ala Met Pro Tyr Leu Glu His Glu Ser Phe Leu Asp
130          135          140
Ile Leu Asn Ser Leu Ser Phe Gln Glu Val Arg Glu Tyr Met Leu Asn
145          150          155          160
Leu Phe Lys Ala Leu Lys Arg Ile His Gln Phe Gly Ile Val His Arg
165          170          175
Asp Val Lys Pro Ser Asn Phe Leu Tyr Asn Arg Arg Leu Lys Lys Tyr
180          185          190
Ala Leu Val Asp Phe Gly Leu Ala Gln Gly Thr His Asp Thr Lys Ile
195          200          205
Glu Leu Leu Lys Phe Val Gln Ser Glu Ala Gln Gln Glu Arg Cys Ser
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Gln Asn Lys Ser His Ile Ile Thr Gly Asn Lys Ile Pro Leu Ser Gly
225          230          235          240
Pro Val Pro Lys Glu Leu Asp Gln Gln Ser Thr Thr Lys Ala Ser Val
245          250          255
Lys Arg Pro Tyr Thr Asn Ala Gln Ile Gln Ile Lys Gln Gly Lys Asp
260          265          270
Gly Lys Glu Gly Ser Val Gly Leu Ser Val Gln Arg Ser Val Phe Gly
275          280          285
Glu Arg Asn Phe Asn Ile His Ser Ser Ile Ser His Glu Ser Pro Ala
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Ile	Ser	Asn	Lys	Lys	Glu	Ala	Lys	Phe	Ala	Gln	Thr	Leu	Gly	Arg	Ile	
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Ser	Pro	Val	Pro	Ser	Pro	Glu	Ser	Ala	Tyr	Thr	Ala	Glu	Thr	Thr	Ser	
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Pro	His	Pro	Ser	His	Asp	Gly	Ser	Ser	Phe	Lys	Ser	Pro	Asp	Thr	Val	
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Cys	Leu	Ser	Arg	Gly	Lys	Leu	Leu	Val	Glu	Lys	Ala	Ile	Lys	Asp	His	
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Asp	Phe	Ile	Pro	Ser	Asn	Ser	Ile	Leu	Ser	Asn	Ala	Leu	Ser	Trp	Gly	
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Gln	Lys	Pro	Cys	Ser	Pro	Phe	Asp	Val	Asp	Lys	Pro	Ser	Ser	Met	Gln	
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Lys	Asp	Thr	Pro	Lys	Lys	Lys	Arg	Ile	Lys	Tyr	Ser	Val	Gly	Ser	Leu	
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Thr	Val	Lys	Glu	Gln	Asn	Phe	Leu	Tyr	Lys	Glu	Thr	Gln	Glu	Thr	Glu	
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Thr	Ala	Glu	Asp	Asp	Ile	Arg	Gln	Asn	Phe	Thr	Gln	Leu	Pro	Leu	His	
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cag	gca	tct	gta	cat	gtt	tct	gat	ttc	agt	aca	gat	aat	agt	gga	tct	2023
Gln	Ala	Ser	Val	His	Val	Ser	Asp	Phe	Ser	Thr	Asp	Asn	Ser	Gly	Ser	
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 Thr Ile Asn Ser Ser Gln Glu His Leu Thr Val Gln Ala Lys Ala Pro
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 Phe His Thr Pro Pro Glu Glu Pro Asn Glu Cys Asp Phe Lys Asn Met
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 Asp Ser Leu Pro Ser Gly Lys Ile His Arg Lys Val Lys Ile Ile Leu
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 Gly Arg Asn Arg Lys Glu Asn Leu Glu Pro Asn Ala Glu Phe Asp Lys
 585 590 595

 aga act gaa ttt att aca caa gaa gaa aac aga att tgt agt tca ccg 2359
 Arg Thr Glu Phe Ile Thr Gln Glu Glu Asn Arg Ile Cys Ser Ser Pro
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 635 640 645

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<212> PRT

<213> Homo sapiens

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Phe	Ile	Asn	Tyr	Ser	Ile	Gln	Lys	Pro	Cys	Ser	Pro	Phe	Asp	Val	Asp	245	250	255
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Thr	Glu	Gln	Lys	Glu	Lys	Val	Glu	Leu	Gln	His	Ile	Ser	Gln	Lys	Asp	370	375	380
Cys	Gln	Glu	Asp	Asp	Thr	Thr	Val	Lys	Glu	Gln	Asn	Phe	Leu	Tyr	Lys	385	390	395
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Pro	His	Pro	Ser	Asn	Glu	Leu	Arg	Gly	Leu	Asn	Glu	Lys	Met	Ser	Asn	420	425	430
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Thr	Gln	Leu	Pro	Leu	His	Lys	Asn	Lys	Gln	Glu	Cys	Ile	Leu	Asp	Ile	450	455	460
Ser	Glu	His	Thr	Leu	Ser	Glu	Asn	Asp	Leu	Glu	Glu	Leu	Arg	Val	Asp	465	470	475
His	Tyr	Lys	Cys	Asn	Ile	Gln	Ala	Ser	Val	His	Val	Ser	Asp	Phe	Ser	485	490	495
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Phe Pro Ala Lys Asp Leu Lys Glu Lys Asp Leu His Ser Ile Phe Thr
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 His Asp Ser Gly Leu Ile Thr Ile Asn Ser Ser Gln Glu His Leu Thr
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 Val Gln Ala Lys Ala Pro Phe His Thr Pro Pro Glu Glu Pro Asn Glu
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 Cys Asp Phe Lys Asn Met Asp Ser Leu Pro Ser Gly Lys Ile His Arg
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 Lys Val Lys Ile Ile Leu Gly Arg Asn Arg Lys Glu Asn Leu Glu Pro
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 Arg Ile Cys Ser Ser Pro Val Gln Ser Leu Leu Asp Leu Phe Gln Thr
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 Ser Glu Glu Lys Ser Glu Phe Leu Gly Phe Thr Ser Tyr Thr Glu Lys
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 Ser Gly Ile Cys Asn Val Leu Asp Ile Trp Glu Glu Glu Asn Ser Asp
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 Lys Lys Ser Ser Thr Ser Val Arg Asp Gly Gly Lys Arg Val Gly Ser
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 Gly Ala Gln Lys Thr Arg Thr Gly Arg Leu Lys Lys Pro Phe Val Lys
 35 40 45
 Val Glu Asp Met Ser Gln Leu Tyr Arg Pro Phe Tyr Leu Gln Leu Thr
 50 55 60
 Asn Met Pro Phe Ile Asn Tyr Ser Ile Gln Lys Pro Cys Ser Pro Phe
 65 70 75 80
 Asp Val Asp Lys Pro Ser Ser Met Gln Lys Gln Thr Gln Val Lys Leu
 85 90 95
 Arg Ile Gln Thr Asp Gly Asp Lys Tyr Gly Gly Thr Ser Ile Gln Leu
 100 105 110
 Gln Leu Lys Glu Lys Lys Lys Lys Gly Tyr Cys Glu Cys Cys Leu Gln
 115 120 125
 Lys Tyr Glu Asp Leu Glu Thr His Leu Leu Ser Glu Gln His Arg Asn
 130 135 140
 Phe Ala Gln Ser Asn Gln Tyr Gln Val Val Asp Asp Ile Val Ser Lys
 145 150 155 160
 Leu Val Phe Asp Phe Val Glu Tyr Glu Lys Asp Thr Pro Lys Lys Lys
 165 170 175

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 <400> 11
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